Appendix B: Project Design Criteria Common to All Alternatives

Project Design Criteria (PDCs) are actions designed for a specific project to reduce or prevent undesirable effects from proposed activities. PDCs can include avoiding the effect, minimizing the effect by limiting the action, rectifying the effect, reducing the effect through maintenance, or compensating for the effect. Unless otherwise noted, these PDCs would be incorporated with any action alternative selected for implementation.

The following table lists project design criteria and management requirements to minimize the effects of proposed management activities. PDCs are implemented with all applicable units, however some PDCs apply to only select units and in those cases, the units are noted by alternative in the table below. Effectiveness of implementing these measures is considered to be high for this project. These measures have been used successfully for implementation of past projects on the Wallowa-Whitman National Forest.

Objective	Task
Botany/TES Plants	
BOT-1 Protection of Sensitive Plant Species	To protect sensitive plant species, known population locations will be excluded from ground disturbing treatments by implementing a no-disturbance buffer around each site of a size adequate to provide protection from implementation impacts. The size of buffer will be determined based on the species and size of the population. Known occurrences will be depicted as Areas-to-Protect on implementation maps. These areas will be identified on the ground as needed for project implementation. To protect Eleocharis bolanderi which is engulfed by Ventenata dubia (VEDU), occurences which contain VEDU should either be burned in fall but only if they can be treated with imazapic (Plateau) in late fall following the burn to prevent increased VEDU. Otherwise they should remain unburned. If treated, before and after occurrence data should be taken for VEDU and ELBO. To protect a hybrid of botanical interest, the *Spiranthes* located in 2018 will be treated the same as a Sensitive occurrence (above). To protect undiscovered whitebark pines, do not cut whitebarks but require thinning of all other tree species less than 21 inces dbh within a 30 foot radius around whitebark pine individuals. To protect potential sensitive plant habitats, avoid ground disturbing activities (piling slash, decking, motorized travel, parking, staging operations) on previously undisturbed non-forested terrain. To protect native plant habitat and potential habitat for sensitive plant species from competition with undesirable non-native species, follow Forest Plan and Regional guidelines for including weed spread prevention measures in implementation contracts and for utilizing native species for restoration and erosion control work. To protect native plant habitat and potential habitat for sensitive plant species in riparian areas from deleterious thermal effects of fire, project fire ignition will not occur within Riparian Habitat Conservation Areas (RHCAs); but low intensity prescribed fire will be allowed to back into the these areas. To protect native plant habitat and potential habitat for sensitive plant species from the potential cumulative effects of soil disturbance and erosion as a result of vegetation management activities: • Rehabilitate landings after completion of timber harvest activities where needed to minimize colonization by undesirable plant species and to minimize bare soil; • Use BMPs (e.g. scattering slash, seeding, construction of waterbars) to minimize erosion from skidtrails.
BOT-2 Protection of Sagebrush Communities and habitats associated	In order to protect sagebrush communities and the habitats associated with sagebrush communities within prescribed fire units, protect sagebrush within the units during ignition of prescribed fire by: • Excluding fire from meadows or other openings (non-forested) where sagebrush plants occur, • Avoiding direct ignition of sagebrush and the area directly under/adjacent to sagebrush plants where they occur outside of the above mentioned openings/meadows, • Ignite units or portions of units where sagebrush occurs within forested stands in the spring to the extent possible to allow for higher live fuel moistures within the sagebrush to lower intensities and

Objective	Task
	severities.
Fire/Fuels	
FF-1 Protection of air quality.	Treatments that create smoke emissions must follow requirements in the State of Oregon Smoke Management Plan. This is a standard practice when prescribed fire is used for broadcast burning, jackpot burning and pile burning.
FF-2 Protection of Protection of Landbirds and Neotropical Migratory Birds	To reduce the potential for impacts to nesting landbirds, prescribed burning activities projected to occur on or after May 20, and/or past the onset of vegetation leaf-out, will be reviewed by the district wildlife biologist. The district biologist will then provide recommendations concerning prescribed burning after May 20 and/or past the onset of vegetation leaf-out. This measure may limit the amount of burning that can be accomplished during a given spring season, particularly during years with higher than average spring precipitation.
FF-3 Protection of overstory trees	FDR - Pullback of fuel accumulation as needed from designated trees prior to prescribe burning to limit overstory mortality and loss of snags during prescribed fire activities.
FF-4 Protection of soil	Where mechanical fuel reduction is necessary, use low ground pressure equipment such as grapple mounted excavator. Fire lines would have appropriate waterbars in steep sections to reduce erosion and sedimentation.
FF-5 Protection of water and soil resources	Rehab fire lines that have the potential to increase public off-road motor vehicle traffic as necessary to ensure created fire lines are near natural appearing, and do not pose potential for increase public off-road motor vehicle and/or forest resource long-term adverse impact.
Heritage Resources	
HR-1 Preservation and protection of heritage sites	To avoid impacts from project activities, all unevaluated and eligible cultural sites will be avoided by ground disturbing activities with a 10-meter buffer. During the layout and development of prescribed burn plans, district fuels specialists will work with forest heritage staff to confirm the locations and appropriate protection measures for known heritage sites. In order to eliminate the risk of damage from fire, a 10-meter buffer will be established around sites with wooden or other fire-sensitive features. Fire control methods may be identified and applied prior to or during burn operations in order to prevent fire spread into buffer zones. Fire control methods include the construction of control lines, by hand or with machinery, around historic sites (generally done prior to burning) and the use of wetlines, hoselays, engines or handcrews to prevent fire spread into buffer zones. Avoidance areas and buffer zones for site protection for Patrick activities will be flagged by a WWNF Archaeologist prior to the onset of project activities.
HR-2 Preservation and protection of heritage sites: Ditches & Railroad Grades	Linear historic ditches and railroad grades will be avoided or treated in such a way as to avoid adverse effects, following guidelines from the 1985 Programmatic Memorandum of Agreement for Management of Historic Water Transportation Ditches and the 1986 Programmatic Memorandum of Agreement for Management of Historic railroad systems on the Wallowa-Whitman National Forest that allowed for avoidance of adverse effects: 1. Ditch corridor is generally 50 feet from the center of the ditch in both directions, where special protection is necessary. 2. No heavy machinery within 10 meters from the edge of the ditches in either direction. 3. Railroad grade corridor is generally 100 feet from the center of the grade in both directions, where special protection is necessary.

Objective	Task
	Common to both: 1. Trees adjacent to a grade will be directionally felled away from the grade 2. Trees can be marked for harvest on ditches; this includes dead or green trees. These trees will be directionally felled away from ditches and railroad grades. The trees will then be lifted off ditches and not dragged. 3. Road crossings and any skidding should be located at existing road crossings and previously disrupted segments. No new crossings will be created on any ditch without an Archaeologist review or agreement. The use of geotextile with cover material to adequately protect a ditch is just one form of many mitigation techniques that can be utilized to cross a ditch. However, no new crossings are planned for the current project. 4. Hand bucking and piling of slash may be used within the ditch and railroad grade corridor. Slash may be hand piled immediately adjacent to, but not on any ditch or grade. 5. Prescribed burning will only be used if no wooden features are present. No fire line other than light hand line should be constructed within the ditch corridor. No fire line will be constructed on ditches or railroad grades at all. 6. If accidental damage occurs to a ditch, it must be repaired to its pre-project configuration of banks and contour. 7. All new road construction and landings will be routed away from the grade corridor.
Invasive Plant Noxious Weeds	
IP-1 Control and prevention of invasive plants	Road blading, brushing, and ditch cleaning in areas with high concentrations of invasive plants would be conducted in consultation with District or Forest weed specialist. Use only gravel, fill, and rock that are judged to be weed seed free by the District or Forest weed specialist. Use weed free straw and mulch for all projects conducted or authorized by the Forest Service on the forest. Native plant materials are the first choice in re- vegetation for restoration and rehabilitation where timely natural regeneration of the plant community is not likely to occur. Actions conducted or authorized by written permit by the Forest Service that will operate outside the limits of the road prism, require the cleaning of all equipment (bulldozers, skidders, graders, backhoes, dump trucks, etc.) prior to entering National Forest System Lands. Project personnel would inform invasive species personnel pre-seasonally annually of upcoming project activities (i.e. ground disturbing activities), so reprioritization of treatment (if deemed necessary) and inventory can begin prior to the start of project activities. New infestations would be inventoried and managed under early detection rapid response (EDRR) guidelines. To reduce the potential spread from known invasive plant sites, these occurrences would be identified as Areas-To-Avoid for moderate to high-risk ground disturbance activities. Coordination will occur with invasive species specialists for exceptions. All landings and skid trails with soil disturbance evident would be rehabilitated and seeded with an approved native seed mix after completion of project activities on those sites.
Minerals	
Min-1 Minerals Objectives	Where mining activity exists or is suspected, Forest Service Minerals Administration is responsible to ensure that mining claims are considered in the review of agency actions that may affect their operations. In order to mitigate potential concerns and conflicts, the following should be addressed throughout the project proposal and implementation: Check LR2000 at: http://www.blm.gov/landandresourcesreports/rptapp/menu.cfm?appCd=2 for any change in

Objective	Task
	claims in the project area. The list of reports includes customer information reports and provides claimant contact information. During the layout and development of timber and prescribed burn plans, district timber and fuels specialists will work with Minerals Staff to confirm the locations and appropriate protection measures for active mining sites. Avoid any areas of heavy mining operations. Typically, there are not merchantable trees in heavily mined areas.
Range Resources	
RR-1 Protection of range resources	During the grazing season, gates would remain operational and closed during and after daily operations. If livestock are present along pasture fences, adequate measures would be taken to prevent movement of livestock between pastures. All livestock improvements would be protected during logging and fuels activities. Any improvements damaged during logging would be repaired by the purchaser. The Forest Service would repair any damage to improvements if the work is being done by Forest Service employees. No trees used as anchors along a fence line shall be marked for harvest. Fence right of ways would be maintained clear of slash during project activities. Condition and Trend transect locations and Ecology Markers within the project area would be protected during mechanical and fuel reduction activities. Harvest and burning activities would be coordinated with District range specialist prior to treatments to identify any needed adjustments to grazing administration.
Recreation	
REC-1 Protection of Public Safety during project activities	To prevent impacts to recreationists, notification of project activities will be by posted at least two weeks prior to start of activities on the WWNF's social media pages and website and signs posted on bulletin boards in the project area.
REC-2 Protection of Recreation Trail	Where Trail #1972 co-exists with the location of the DFPZ and harvest activities, the trail bed will be returned to original condition following all project activities.
Soils	
SQ-1 Greater than 20 percent Detrimental Soil Conditions	In areas where **more than 20 percent** detrimental soil conditions exist from prior activities, the cumulative detrimental effects from project implementation and restoration must, at a minimum, not exceed the conditions prior to the planned activity and should move towards a net improvement in soil quality (R6 Soil Quality Standards).
SQ-2 Less than 20 percent Detrimental Soil Conditions	In areas where **less than 20 percent** detrimental soil conditions exist from prior activities, the cumulative detrimental effect of the current activity following project implementation and restoration must not exceed 20 percent. In units expected to exceed 20 percent detrimental soil conditions: 1. Rehabilitate landings and used skid trails as needed thru de-compacting to bring post-activity DSCs to acceptable levels in each activity area. 2. If de-compacting is not feasible (i.e., shallow, clayey, rocky and/or topographic constraints) restrict harvest activities to winter harvest conditions. 3. If none of the above actions are feasible, then the particular treatment area should be excluded from mechanical activities.

Objective	Task
SQ-3 Seasonal Conditions	Limit equipment operations to frozen, snow-covered or acceptable soil moisture conditions. Limit machine pivots and turns, where possible. During the winter season ground conditions shall meet at least one of the following criteria for machine operations: 1. Six inches of frozen ground, 2. Four inches of frozen ground with one foot of snow, 3. Two feet (>24 inches) or more of snow, 4. One foot (>12 inches) slash mat in combination with one foot of snow, or 5. Soil moisture conditions acceptable for minimizing rutting or puddling of soils Some "watch-out" situations include: 1. Machine break-through begins to occur 2. Equipment tracks sink deeply (half the width of the track) below the soil surface with one or two passes 3. Ruts greater than six inches deep form 4. Mid-day temperatures are forecast to rise above freezing 5. Surface melt occurs over still-frozen subsurface
SQ-4 Shallow Soils	Avoid operating on shallow soils (<25 cm soil depth) and meadows unless over frozen ground/snow. Shallow soils and clayey soils should not be used for temporary roads, skid trails, slash piles, or log landings; unless no other location is practical and there is an existing prism in which case equipment activity should remain within existing prism as much as possible.
SQ-5 Udic Soils	Avoid early summer equipment operations on units with udic moisture regime (moist soils with inherent excess soil moisture either yearlong or on a seasonal basis). If this is not possible or there is evidence of lingering moisture present, operate on a bed of slash maintained at >12 inches to mitigate compaction and rutting.
SQ-6 Soil mitigations during ground-based operations	Ground-based equipment should not operate on sustained slopes exceeding 30%, unless reviewed by soil specialist or hydrologist. Prioritize areas of slopes greater than 30% as leave areas within units. Designated skid trails should be spaced on average 100 feet apart, and the trails should average no more than 12 feet in width. Closer spacing due to complex terrain will be with Timber Sale administrator approval. Existing skid trails will be used as much as possible. 1. If equipment must leave designated trails for operational purposes, no more than two passes over any piece of ground is permitted. 2. Ensure that water control structures (water bars or slash surfacing, as approved by the Sale Administrator or COR) are installed and maintained on skid trails that have gradients of 10 percent or more; Ensure erosion control structures are stabilized and working effectively before spring runoff. When cut to length harvest systems are used, maintain an appropriate slash mat of at least 12" when possible during operations to prevent equipment weight from altering soil bulk density and causing displacement of effective ground cover. If unable to maintain an appropriate slash mat, impacts are expected to be the same as tractor logging.
SQ-7 Shallow and Nutrient Poor Soils	Whole-tree yarding methods should be avoided in shallow soils (<25cm), nutrient-poor (granitic soil, glacial outwash sands, many coarse-textured soils) soils or in sensitive ecosystems. If not possible, backhaul slash and redistribute on skid trails to an average depth of 6 inches within the harvest area, and extend the time period for reentry to allow more time for nutrient inputs.
SQ-8 Soil mitigations for slopes >35%	Use advanced logging systems where treatment is planned for continuous slopes greater than 30%. Advanced logging systems may include a variety of techniques including, but not limited to, cable yarding or other advanced logging systems where adequate protection against soil compaction and displacement can be demonstrated. 1. Use directional hand falling of trees and winching on slopes greater than 30% that cannot be reached by harvesting equipment from designated skid trails, as much as possible. Leading end suspension

Objective	Task
	should be implemented when cabling or skidding material. 2. Skid trails or yarding corridors on slopes greater than 30% used by the purchaser should be reclaimed by applying appropriate erosion control measures such as the placement of effective ground cover in conjunction with, or in place of, water bars for rehabilitation.
SQ-9 RVR Treatments	Commercial RVR treatments will utilize cut to length harvest systems and will leave slash generated if the quantity is not in conflict with fuel objectives. NCT and PCT RVR treatments will utilize tracked grapple equipment, and evenly distribute small slash piles. Erosion control measures will be installed after all ground-disturbing activities. 1. Slash should provide at least 65% effective ground cover and up to 8 tons of slash per acre. Slash piles should be burned when soil moisture is high and piles are small (less than 25 square feet).
SQ-10 Slope Instability & Mass Movement	Signs of slope instability and mass movement include cracks in soil, tilted or bent trees, increased spring activity or newly wet ground, hummocky or uneven terrain, sunken or broken road beds, and/or a recent sag pond has formed that isn't human created. Specific design criteria for unstable or potentially unstable areas provided by geotechnical engineers are as follows: 1. 1040 road historic landslide - No road construction will occur within the headscarp during the wet season or near any wet areas with slopes greater than 30 degrees. 2. Other landslide areas on RD 1042-105 and RD 1046-35 will require periodic maintenance of ditches due to sloughing along road cuts. 3. Other landslide areas on RD 7380, RD 1046-160, and RD 1055-300 will require a TSIL – D assessment before implementation of proposed activities. There will be no new road construction during wet season or when the ground is saturated. Additionally: • The landslide area on the 7380 road will require field inspection by a qualified specialist prior to any new road construction. • The landslide area on the 1046-160 road will require field verification by a qualified specialist prior to implementation of proposed activities. • The landslide area on the 1055-300 road, will require field investigation by a professional engineer, prior to implementation of proposed activities.
SQ-11 Organic matter mitigation	Retain adequate supplies of coarse woody debris (CWD) (greater than three inches in diameter) to provide organic matter reservoirs for nutrient cycling and micro biotic (fungi and bacteria) habitat following completion of all project activities. Dry forest stands should have 5 to 10 tons per acre of coarse woody debris retained within the stand. Moist – mixed conifer stands should have 7 to 15 tons per acre of coarse woody debris retained within the stand. • In order to retain adequate organic matter reservoirs for nutrient cycling and maintenance of long-term site productivity, minimize disturbance and piling of decaying large woody debris during fuel treatments. Strive to maintain fine organic matter (commonly referred to as the duff layer) over at least 65 percent of an activity area following both harvest and post-harvest operations. Keep fine organic matter disturbance to a minimum if the potential natural plant community on site is not capable of producing fine organic matter over 65 percent of the area (Regional Soil Quality Guidelines / FSH 2090.11).
SQ-12 Soil erosion mitigations	Prior to the seasons ending precipitation event, ensure necessary water control structures are installed and maintained on skid trails over 10% slope after all ground-disturbing activities. Ensure erosion control structures are stabilized and working effectively and ensure that effective ground cover is left. 1. In areas of general disturbance in ash soils, the top layer (A Horizon) should be pulled back over any disturbed surface to prevent permanent loss of productivity. (Pull berms back over disturbed surfaces) 2. After completion of land management activities, the minimum effective ground cover (EGC) within each activity area within disturbed areas shall be in place to prevent erosion from exceeding background erosion rates for each of the four established erosion hazard classes: low, medium, high or very high (table below). Effective ground cover is defined as the basal area of perennial vegetation, plus duff, litter and coarse fragments (greater than 2mm sizes), including tree crowns and shrubs that are in direct contact with the ground.

<table>
<tr><th>Objective</th><th>Task</th></tr>
<tr><td></td><td>
<table>
<tr><th rowspan="2">Erosion Hazard Class</th><th colspan="2">Minimum Effective Ground Cover</th></tr>
<tr><th>1st Year</th><th>2nd Year</th></tr>
<tr><td>Low</td><td>20-30%</td><td>30-40%</td></tr>
<tr><td>Medium</td><td>30-45%</td><td>40-60%</td></tr>
<tr><td>High</td><td>45-60%</td><td>60-75%</td></tr>
<tr><td>Very High</td><td>60-90%</td><td>75-90%</td></tr>
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<tr><td>SQ-13
Soil rehabilitation</td><td>In areas where de-compacting is prescribed, de-compact to a depth sufficient to ameliorate the presence of detrimental soil compaction (usually between 2 and 12 inches). Discontinue de-compacting where large rocks are continually brought to the soil surface. If a change in soil color is noticed by the operator, operate at a shallower depth that prevents topsoil and subsoil from mixing. Skid trails on slopes steeper than 30 percent should not be de-compacted.

1. Effective ground cover for all de-compacting treatments should take advantage of harvest slash. If no suitable organic material is available, then weed free straw or other equivalent erosion control measures should be applied on slopes exceeding 15%, adjacent to waterways and ditches (within 100 feet), prior to seasons ending precipitation event.. See BMP AqEco-2 for additional information.</td></tr>
<tr><td>SQ-14
Roads and Realignment</td><td>Non-system or legacy road templates will be used for temporary roads to the greatest extent possible. Creation of new temporary roads will be minimized and will be located to minimize or mitigate adverse effects to soil, water quality and riparian resources. Locate roads to fit the terrain and follow natural contours. Placement of new temporary roads should be on deep soils, as possible. Avoid creating new temporary roads on clay-dominated soils. Any new temporary roads within RHCAs will be approved by a hydrologist and sale administrator. Any temporary road development on slopes greater than 30% will require engineering and road support. Temporary road sediment mitigation strategy should include:

• Locate on benches where possible to reduce cut/fill construction and sedimentation risks
• Provide adequate drainage
• Adopt stormproof designs by outsloping, water drainage features, and location
• Have a post-harvest rehabilitation plan for temporary roads that include culvert removal, outsloped template, scarification or de-compacting, placement of slash materials, and seeding as appropriate.

Rehabilitate all temporary roads used for the current entry (existing and new). This may include masking/obliterating entrances, de-compacting, culvert removal, re-contouring cuts and fills, hydrologically stabilizing, seeding, and/or placing fine slash or other organic materials over treated surfaces to establish effective ground cover protection where available. Install suitable storm water and erosion control measures to stabilize disturbed areas and waterways before seasonal shutdown of project operations or when severe or successive storms are expected.

Slash and organic material that has to be incorporated into road rehabilitation should not be burned. De-compacting of temporary roads may occur as a post-sale area improvement activity where conditions are appropriate.

Rehabilitation of non-system roads used for project activities, will be proposed for KV funding for improvement of hydraulic function, watershed conditions, and soil productivity.

Realignment can cause considerable disturbance to an area and short-term increased soil erosion. Techniques to help reduce negative effects to riparian areas are soil bioengineering, landslide mitigation strategies, and erosion control devices. Soil bioengineering techniques include live staking, live crib walls, live fascines, brush layering, branch packing, gully repair, and log terracing.
Erosion control devices include barriers, retention structures, and mulches. The most common temporary barriers are filter fences, straw bales, and straw wattles.
The most common retention structure is the sediment basin, often used to mitigate disturbances during construction, and sited below known sources of sediment. Mulches include straw, woodchips, and soil adhesives to protect bare soil or recently seeded areas.</td></tr>
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Objective	Task
SQ-15 Fire and Fuels	Grapple pile operations would use the same skid trails as harvest operations where possible. Mechanical fuel operations would adhere to ground-based equipment PDCs mentioned above. Where feasible, pile slash on sites already disturbed by logging activities (e.g. skid trails, landings, and roads) in order to minimize additional detrimental soil impacts from burning. Avoid locating slash piles on shallow soils (<25cm). Piling slash should not occur above or below culverts or drainages to prevent sediment delivery. If piling fuels near a culvert or drainage, pile fuels away from the culvert or drainage high water flow. Limit hand pile size to less than 50 square feet to reduce organic horizon loss and limit soil heating. Pile burning when duff is moist or wet can reduce organic matter loss and soil heating. When using a boom-mounted equipment, operator shall plan off-trail travel paths to make full use of the machine's capability (e.g., using the full boom reach of the machine) to limit ground disturbance and minimize the number of off-trail passes. Reclaim all machine-built fire lines by redistributing displaced topsoil and unburned woody debris over the disturbed surface as needed after burn has been completed. Install water bars on fire lines using the following guideline: 5-15% slope every 150 feet, 16-35% slope every 40 feet, 36-60% slope every 30 feet, and >60% slope every 15 feet. On slopes less than 15%, water bars may not be needed if adequate amounts of slash are available. Avoid direct lighting of stumps and large woody debris greater than 9 inches in diameter during prescribed burn operations. Slash and organic material that has to be incorporated into road rehabilitation should not be intentionally burned.
SQ-16 Low productivity soil mitigation	Adequate amounts of slash should be left within the unit in order to retain fine organic matter on low productivity soils with inherently lower ability to retain adequate organic matter reservoirs. If Regional Soil Quality Standards and Guidelines are unable to be met because the stand is incapable of producing enough slash, all slash should be left untreated.
Transportation	
TRANS-1 NFS roads used for the project	Road maintenance may occur on any open road in the planning area with maintenance also occurring on stored roads that access designated treatment areas. Proper road maintenance using nationally accepted Best Management Practices has a positive impact on the safety, drivability, and efficiency of the transportation system, as well as limiting watershed effects caused the transportation system. System roads planned for project use would be maintained to a standard needed for project use. Maintenance activities would be in accordance with the Wallowa-Whitman standard specifications for timber sales. Typical road maintenance activities that can be expected across the planning area include the replacement of existing culverts; cleaning road drainage features including ditches, culverts, and dips; full depth reconditioning of the road prism; road base stabilization; fill slope stabilization; clearing and brushing of the existing right of way; grubbing of stumps within the travel way; road grading; and placing new road surface aggregate. Other activities will be considered where potential for sediment delivery to nearby stream courses is considered likely and unacceptable including: rocking ditches, catch basins and culvert outlets; installing new drainage features including culverts and drainage dips (surface cross drains); and roughening lead out ditches with slash. Generally, maintenance activities do not increase the footprint of the existing infrastructure and are only utilized to restore infrastructure to applicable safety and hydrologic standards. Culvert replacements that fall into the maintenance category may be performed on both ditch relief culverts and stream crossing culverts where the new culvert and associated disturbance is substantially similar to the culvert being replaced and not subject to fish passage design. One example of this is where an existing culvert is structurally at the end of its life, but as far as size and alignment are concerned, the culvert satisfies current standard. However, change in size and alignment of a culvert do not necessarily move the activity from maintenance to reconstruction, but rather should be evaluated based on the question of whether the replacement creates new disturbance. System roads that are operationally closed (ML 1) roads would be opened for project use only and re-closed, unless specifically addressed in the EA to remain open. System roads needing work beyond the intent of the road maintenance specifications would be reconstructed

Objective	Task
	to the minimum standard needed to support haul. Temporary roads would be constructed and then stabilized and blocked under the terms of the contract. Location, clearing width and any special construction requirements (including post-haul treatment) would be agreed to in writing prior to construction. They would be closed and stabilized after use.
TRANS-2 Re-construction & Re-alignment	*1.* ***Replacement of stream crossing structures including major culverts and bridges*****.** If after inspection, culverts/bridges are not deemed suitable for commercial haul, public traffic, aquatic passage or any combination thereof, replacement of the infrastructure in question may be completed to the applicable safety, environmental and aquatic passage standards. A multidisciplinary team of specialists made up of an engineer, a fisheries biologist, a hydrologist and an archaeologist will develop a site-specific design for stream crossings that are proposed for replacement. In all cases, structures being replaced will meet AASHTO (American Association of State Highway Transportation Officials) and USFS R6 Aquatic Passage Design Criteria. This activity differs from replacement of existing culverts under the maintenance section of this document in that structures covered by this section may be substantially upgraded and\or realigned and likely include a larger disturbance footprint. *2.* ***Minor realignment of less than 0.5 miles in length of existing road where significant safety, transportation, or hydrologic concerns exist***. Minor realignment consists of moving a segment of the existing road template the minimum distance necessary to mitigate the safety, transportation, or hydrologic concern. Realignments will be designed to meet the design standard of the level of road in question. Realignment will not exceed more than 0.5 miles of existing road per segment. Hydrologic concerns could include but are not limited to the following examples: A road located in Riparian Management Area where either horizontal or vertical movement of the stream is producing serious erosion effects on the road template; A road located in gully/low spot where seasonal runoff concentrates in the road prism and creates a public safety, road maintenance, and sedimentation problem; a road located in active landslide where additional use of the existing template could endanger public safety and natural resources. Some examples of transportation and safety related concerns that could lead to realignment of road segments are proximity to unstable hillslopes, current location does not provide for inter-visible turnouts or other sight distance issues, road segment is too steep for safe maneuverability by design vehicle. The preceding examples are not an exhaustive list. In cases where realignment is prescribed, the realignment activity will be designed to limit new disturbance to the extent practical. Curve widening may occur to mitigate site distance safety concerns or to allow commercial traffic to safely navigate a corner. Curve widening typically entails removing material from the inside corner of a curve to provide additional site distance, wheel tracking and\or escape space. Typically, this treatment is utilized only on the open road system in areas where the interface of public and commercial traffic creates an unacceptable risk. However, in some cases, this treatment may be called out on a stored road where navigation of the corner in question is not feasible without geometric alteration. This treatment will be limited to approximately 500 CY or less of material removal per treated site.
TRANS-3 Roadside Hazard Trees	Danger trees (standing trees that present a hazard to people due to conditions such as, but not limited to, deterioration or physical damage to the root system, trunk, stem, or limbs and the direction of the lean of the tree would allow that tree to reach the roadway if it fell) would be cut along all haul roads (approximately 15 trees/mi). If the trees are within no-activity RHCA buffers as described previously or needed to meet down wood requirements they would be cut and left on site. If they are outside of those areas or not required to be retained for other resource needs and are of commercial value, they may be removed with this project.
TRANS-4 Right-of-Way (ROW)	ROW access will be acquired where privately owned roads on private lands adjacent to the project area are utilized to facilitate logging, fuel reduction activities and other project related activities. Where short term access is required but access is not going to be needed in the long term, a temporary road use permit may be acquired. If the road is needed for public access and future management, easement acquisition will be pursued.
TRANS-5 Rock and Water Sources	Rock quarries and water sources will be utilized throughout project implementation. These sources are scattered across the project area.
Vegetation	

Objective	Task
VG-1 Protection of Aspen	Minimize soil compaction to the aspen root system by heavy machinery during harvesting operations. Generally, the irregular shape of aspen units and their small size has allowed the use of machinery without disturbing the aspen root system. Any entry into the aspen would be approved by the forest service.
VG-2 Prevention of Pine Engraver Beetle (*Ips Pini*) spread	Timber Harvest and Road Clearing and Maintenance. In harvest units of greater than 2 MBF per acre gross harvest volume of ponderosa pine- Minimize the amount of ponderosa pine material equal to or greater than 4" diameter at the small end in the woods from December 1 through June 30th. Whenever possible avoid creating piles of ponderosa pine slash within this timeframe. Log decks containing ponderosa pine should be hauled prior to spring flight of the beetle on June 1st. If this is not possible due to other restrictions such as spring break up, decks containing ponderosa pine shall be given top priority for haul as soon as feasible.
VG-3 Protection of old ponderosa pine during prescribed fire	In units with large ponderosa pine trees present, moist spring burning conditions are preferred. These units should be prioritized for early spring burning. Avoid direct lighting around the base of old trees. Raking the duff layer around old trees may be necessary dependent on stand conditions at the time of burning. The district or forest silviculturist must visit stands identified for burning one season prior to burning to assess the need for raking. If these activities are deemed required, raking specifications and old tree protection measures will be included in the burn plan.
VG-4 RVR Commercial Thinning Treatments	No treatment buffers for commercial harvest would be implemented for category 1 and 2 streams. The width of the no treatment buffers will be 100 feet for a category 1 stream and 75 feet for a category 2 stream (on either side of stream). No commercial harvest would be permitted within the RHCA of a category 3 or 4 stream (50 feet on either side of channel or pond). In addition, ground based harvest activities would only take place above an existing road outside of the no treatment buffers. In woods processing/cut to length harvest systems would be required for any ground-based harvest within Riparian Conservation Areas (RHCA). Ground based harvest activities would utilize existing landings where available and designated skid trails. Piles associated with log processing for cable yarding systems would be burned on landing sites.
VG-5 RVR NCT/PCT Treatments	PCT activities will be within commercial harvest units and would therefore have the same buffer width as the commercial unit. Some trees may be felled and left on site to improve large down wood and to reduce ungulate browse pressure.
VG-6 Piling and Pile Burning associated with RVR NCT/PCT	Lighting of hand and machine piles or jackpot fuels is permitted within the RHCA if slash is placed into piles approximately four feet high and six feet in diameter. Machine piling is permitted within the portion of the RHCA that ground based harvest will take place; Above a road at least 100 feet away from the channel for a category 1 stream and at least 75 feet away from the channel for a category 2 stream.
VG-7 RVR Prescribed Burning	Prescribed burning would be allowed to back into riparian areas, but no active lighting for landscape, prescribed burning would be allowed within the RHCA.
Visuals	

Objective	Task
VIS-1 Visual Quality Objectives	Screen landings from Hwy. 7, Forest Roads 1035 and 1040 and Road 507. New temporary roads and landings may be evident, but must remain subordinate to the shape and pattern of natural appearing forest canopy. Slash piles shall not be located within the 100 feet of Hwy. 7, Forest Roads 1035 and 1040, Road 507 and Antlers Guard Station In areas of Retention foreground as seen from Hwy. 7, skid patterns, slash, soil exposure and stumps should be visually minor or unnoticed 4" maximum height of stumps.
Water Quality	
WQ-1 INFISH Protection of Riparian Habitat Conservation Areas (RHCAs)	Stream and riparian protection is based on Forest Plan as amended by INFISH. INFISH standards and guidelines related to timber harvest, roads, and fire apply to this project and are incorporated by reference into this document. Category 1 – Fish bearing streams: RHCA consist of the stream and the area on either side of the stream extending 300 feet slope distance from the edges of the active stream channel. Category 2 – Perennial non-fish bearing streams: RHCAs consist of the stream and the area on either side of the stream extending 150 feet slope distance from the edges of the active stream. Category 3 – Ponds, lakes, reservoirs, and wetlands greater than 1 acre: RHCAs consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or the extent of the seasonally saturated soil, or 150 feet slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetland, pond or lake, whichever is greatest. Category 4 – Seasonally flowing or intermittent streams, wetlands less than 1 acre, landslides, and land-slide prone areas: This category includes features with high variability in size and site-specific characteristics. At a minimum the RHCAs must include: the area from the edges of the stream channel, wetland, land slide, or land-slide prone area to a distance equal to 50 feet slope distance.
WQ-2 Protection of water quality – Clean Water Act	Implement and monitor Best Management Practices (BMPs) and incorporate findings into project implementation. Ground based equipment would cross draws and channels at sites pre-approved by the responsible Forest official, and number of crossings would be minimized. Harvest systems would be designed to locate trail crossing at right angles to stream channels. Damaged stream banks and crossings shall be reshaped to stable conditions. Dry stream channels would not be used as forwarder trails, landing sites, or as road locations. Suspend commercial use of National Forest when commercial contract or permit conditions create movement of sediment laden water from the road surface in areas where it could flow into stream channels. This may be from pumping of saturated fines by passage of commercial or contract vehicles, creating sediment-laden water on the road surface during rain or snowmelt periods. Timber sale purchaser would prepare a spill containment plan that would ensure that spilled fuel would not leave the site. Fuel would not be stored within any RHCA. Where the proposed haul routes encounter wet areas, new drainage structures and/or surface rock would be installed. Proposed temporary roads would be of low impact and storm proof design – out-sloping, water drainage features, and located on benches where possible to reduce cut/fill construction and sediment risks. Temporary roads would have drainage installed if retained over-winter. Upon completion of project activity, roads would be scarified if required. Berms would be pulled into the roadbed and re-contoured, and the road would be re- vegetated with native seed and mulched with existing slash. Road entrances may be camouflaged to discourage use.

Objective	Task
	Within RVR units: Maintain an average of 100 feet between skid trails. If a forwarder is used, slash would be left in forwarder roads from clearing and product manufacture to create slash mats. Maintain an average of 60 feet between forwarder roads. Material may be skidded to roads. Where roads occur within RHCAs, allow skidding to road when the road is at least 100 feet away from perennial streams, or 50 feet away from intermittent streams. Landings would be rehabilitated to promote vegetation growth. No mechanical fuel treatment piles would be constructed within 50 feet of any channel. For NCT treatments, do not implement more than 25% from the total RHCA acres each year within the North Fork Burnt River subwatershed to minimize short term shade losses to a 303(d) water temperature impaired stream.
WQ-3 Protection of fish habitat	Fell all non-commercial thinned coarse wood (less than 10 inch dbh) towards the stream or valley that falls within 50 feet of the stream bank in category 1 RHCAs (approximately the site potential tree zone for 10 inch diameter trees). Directionally fell non-desirable trees under desirable overstory trees away from early seral tree boles. Remove and disperse any limbs from trees cut outside of drip line and remove any tree boles from within 5 feet from desired tree bole. If fuel loadings exceed greater than 15 tons per acre in fuels sizes less than 5 inch dbh, hand piles may be created with excess slash. Minimize coarse wood loading upstream and/or upslope of culverts, irrigation ditches or upstream of private/public land ownership boundaries. If these occur, directionally fell away from infrastructure and remove all felled material away at least 15 feet. State of Oregon in-stream work window (July 1 thru October 31). When drafting water, sources would be monitored for reduced flow. During low flow (less than 5 cfs) conditions, spring fed ponds would be used as sources prior to the use of stream sources whenever feasible. During road maintenance and snow plowing, side cast of materials would not occur where these materials could be directly or indirectly introduced into a stream, or where the placement of these materials could contribute to the destabilization of the slope. Slough and waste materials removed during road maintenance activities, including ditch and culvert cleaning, would be deposited in approved disposal sites outside RHCAs. For erosion control and stabilization, the disposal site would be seeded with native seed. Ditches would only be maintained where the water captured by the ditch is not able to be transported to the adjacent drainage structure that carries the water across the road. Refueling, repair, and maintenance of equipment would be done at landings or on forest roads outside of RHCAs. Within RHCAs- Avoid impacting live or dead trees associated with temporary roads, culverts or any other proposed actions in RHCAs. If safety or other hazardous trees are observed during implementation, work with a District Fish Biologist or Hydrologist to place the tree in the stream to help move large wood RMOs towards Forest Plan standards Road reconstruction would limit vegetation modification to the road prism, road surface, and ditch lines to that work necessary to maintain a safe travel way and functional drainage system. Utilize existing non-NFS road templates where possible. Temporary culverts would be removed and hauled from the project area. Banks of crossings would be reshaped to match undisturbed sections adjacent to the crossing.
Wildlife	

<table>
<tr><th>Objective</th><th>Task</th></tr>
<tr><td>WL-1
Maintain Snags and dead wood habitat</td><td>All snags would be retained unless identified as a safety hazard.

Snags felled for safety reason would remain onsite to contribute to course wood where course wood amounts are deficient.

To reduce the potential for loss of snags during prescribed burning, employ passive lighting techniques near snags larger than 12 inches. Techniques include lighting at a slope position above snags, and avoid lighting directly adjacent to or at slope positions directly below snags.

Where material is available, all treatment units (harvest and prescribed burn) will exceed the minimum levels for down woody material described in the table below for each species:
<table>
<tr><th>Species</th><th>Pieces/ acre</th><th>Diameter (small end)</th><th>Min length</th><th>Total Lineal Length</th></tr>
<tr><td>Ponderosa Pine</td><td>3-6</td><td>12"</td><td>6’</td><td>20-40’</td></tr>
<tr><td>Mixed Conifer</td><td>15-20</td><td>12"</td><td>6’</td><td>100-140’</td></tr>
<tr><td>Lodge pole Pine</td><td>15-20</td><td>6"</td><td>8’</td><td>120-160’</td></tr>
</table></td></tr>
<tr><td>WL-2
Provide for Green Tree Replacements (GTRs)</td><td>Sufficient green trees of adequate size are to be retained in harvest units to provide replacements for snags and logs through time via natural mortality. Generally, green trees need to be retained at a density of 25-45 trees per acre, depending on biophysical group. All harvest prescriptions in the project would retain green trees within or above this range.</td></tr>
<tr><td>WL-3
Protection of Goshawk Nest areas</td><td>Direction in the Regional Forester’s Forest Plan Amendment #2 requires that a nest area of at least 30 acres be delineated around active goshawk nests. Timber harvest shall be deferred in these nest areas for as long as the nest is active. An active nest is defined as one that has shown evidence of use within the past five years. Potentially disruptive activities around the nest area should also be deferred until after the nesting season. A 400-acre post-fledging area will also be delineated around the nest.</td></tr>
<tr><td>WL-4
Protection of Big Game Winter Range and Seasonal Elk Security</td><td>Logging operations in Big Game Winter Range will be conducted outside the period between December 15 and April 30. Waivers to operate during this time period may be requested of the District Ranger.

Logging operations in the Patrick Creek Cooperative Travel Management Area will be conducted outside the closure period between May 1 through July 1 and outside buck and bull archery and rifle season approximately September 1 through November 15. Waivers to operate during this time period may be requested of the District Ranger.</td></tr>
<tr><td>WL-5
Protection of Landbirds and Neotropical Migratory Birds</td><td>To reduce the potential for impacts to nesting landbirds, prescribed burning activities projected to occur on or after May 20, and/or past the onset of vegetation leaf-out, will be reviewed by the district wildlife biologist. The district biologist will then provide recommendations concerning prescribed burning after May 20 and/or past the onset of vegetation leaf-out.</td></tr>
<tr><td>WL-6
Protection of Connectivity</td><td>All treatments within identified connectivity corridors will maintain canopy closure within the top 1/3 of site potential.</td></tr>
</table>

Monitoring Framework

Monitoring specific to project activities would be accomplished to assure the activities conform to objectives of the Forest Plan. Project level monitoring is a component of Forest Plan monitoring. The following types of monitoring would be accomplished:

Implementation Monitoring (I) –Are mitigation measures and BMPs being implemented as planned?

Effectiveness Monitoring (E) – Did mitigations and protection measures result in desired effects?

If monitoring shows that mitigation measures of BMPs are not being implemented as planned or are not being effective in meeting resource objectives, activities would cease or be modified to correct problems.

Resource	Type	Activity Monitored	Frequency & Timing	Responsible Person
Fuels	I	Prescribed Burning	During Burn Period	Fire Management Officer (FMO)
	I & E	Smoke Dispersal	During burn period and after lighting is complete	Fire Management Officer FMO) or Burn Boss
Noxious Weeds	I	Noxious weed inspections, equipment cleaning, weed infestation avoidance, weed inventory, documentation and communication	Prior to equipment item being operated on the project and daily during active operations near noxious weed infestation	Sale Administrator/ Zone Invasive Plant Coordinator
	E	Noxious weed survey to facilitate EDRR	Annually for 3 years following project end.	District Invasive Plant Crew
	I	Noxious weed treatment/ EDRR of disturbed ground	Annually for 3 years following project end.	District Invasive Plant Crew
	I	Road rock sources, pits and/or quarry noxious weed inspections	Prior to use for road construction, reconstruction, or maintenance	Zone Invasive Plant Coordinator/ Zone Engineer
	I	Designate Areas to Avoid where project area has invasive plant in seed stage	Prior to work initiation	Sale Administrator/ Zone Invasive Plant Coordinator
	I	Broadcast seeding of disturbed soil along roads, skid trails and landings.	Immediately following soil disturbance	Sale Administrator and Road Maintenance Foreman or COR
	I	Broadcast seeding of burned landing piles and grapple piles.	Earliest appropriate seeding opportunities after the piles are	Zone Invasive Plant Crew

			burned up.	
	I	Noxious weed avoidance while prescribed burning	During burn plan formation map of weed sites would be provided / Prior to burn ignition	Zone Invasive Plant Coordinator / RX Burn Planner and Burn Boss
Range	I	All activities to avoid damage to range improvements	Daily during active operations	Sale Administrator/ Fuels Management Officer
	E	Forage Utilization and administration to standard	Following treatment in active pastures	Range Management Specialist
	E	Burning Activities	Following prescribed fuels treatments	Fuels Management Officer
Soils		Annual BMP Audits		Soils Specialist
	I & E	1040 road historic landslide	The area will be monitored the first two years or as needed following prolonged saturated periods within 5 years of timber harvest and if it appears that landslide movement is occurring (slumping, change in slope, etc), than a Field Inspection	Soils/Professional Engineer
		Other landslide areas on RD 7380, RD 1046-160, and RD 1055-300 will require a TSIL – D assessment There will be no new road construction during wet season or when the ground is saturated.	Before implementation of proposed activities.	
		The landslide area on the 7380	require field inspection prior to any new road construction.	Professional Engineer
		The landslide area on the 1046-160 road	require field verification prior to implementation of proposed activities	Professional Engineer
		The landslide area on the 1055-300 road	require field investigation prior to implementation of proposed activities	Professional Engineer
Botany	I & E	Burning Sagebrush communities with invasive annual grasses	Monitoring would occur prior to prescribed fire implementation and within two	Ecology Program and personnel who have time or interest

		nearby	seasons post implementation, then every five years for 3 cycles (15 years total) to evaluate the effectiveness of the above measures.	
Wildlife	E	Road closures	Roads may be bermed or gated if existing closures are deemed ineffective.	Wildlife Specialist or Natural Resource Bio Tech
Wildlife	I	Snag Densities	Post-treatment snag densities will be monitored, and snag creation will be implemented where densities are insufficient to support reproduction of primary cavity excavators.	Wildlife Specialist or Natural Resource Bio Tech
Wildlife	I	Aspen Treatment	Aspen treatment units will be monitored, and fencing may be constructed where regeneration is being inhibited by ungulate browsing.	Wildlife Specialist, Natural Resource Bio Tech, Silviculture